

1 **Claims**

2 **We claim:**

- 3 1. A stabilized phenolic resole resin composition comprising a phenolic resin and an
4 effective stabilizing amount of an ortho ester.
5
- 6 2. The stabilized phenolic resole resin composition of claim 1 which also contains a
7 solvent selected from the group consisting of aromatic hydrocarbon solvents, ester
8 solvents, and mixtures thereof.
9
- 10 3. The stabilized phenolic resole resin composition of claim 2 wherein the stabilized
11 phenolic resole resin composition comprises a polybenzylic ether phenolic resin
12 prepared by reacting an aldehyde with a phenol such that the molar ratio of
13 aldehyde to phenol is from 1.1:1 to 3:1 in the presence of a divalent metal catalyst.
14
- 15 4. The stabilized phenolic resole resin composition of claim 3 wherein the phenol
16 used to prepare the phenolic resole resin of the stabilized phenolic resole resin
17 composition is selected from the group consisting of phenol, bisphenol, o-cresol, p-
18 cresol, and mixtures thereof.
19
- 20 5. The stabilized phenolic resole resin composition of claim 4 wherein the aldehyde
21 used to prepare the phenolic resin of the stabilized phenolic resole resin
22 composition is formaldehyde.
23
- 24 6. The stabilized phenolic resole resin composition of claim 5 wherein the ortho ester
25 is selected from the group consisting of triethyl orthoformate, trimethyl
26 orthoformate, and mixtures thereof.
27

- 1 7. The stabilized phenolic resole resin composition of claim 6 wherein the amount of
2 solvent in the resin composition is from 20 weight percent to 80 weight percent
3 based upon the weight of the phenolic resin composition.
4
- 5 8. The stabilized phenolic resole resin composition of claim 7 wherein the amount of
6 ortho ester is from about 0.1 weight percent to about 1.5 weight percent based upon
7 the weight of the phenolic resin.
8
- 9 9. The stabilized phenolic resole resin composition of claim 6 wherein the phenolic
10 resole resin of the stabilized phenolic resole resin composition is an alkoxy-
11 modified benzylic ether phenolic resole resin and the catalyst used to prepare said
12 resin is a divalent zinc salt.
13
- 14 10. A foundry binder system comprising the phenolic resole resin component of claim
15 1, 2, 3, 4, 5, 6, 7, 8, or 9 and a polyisocyanate component.
16
- 17 11. A foundry mix comprising:
18
19 A. a major amount of an aggregate; and
20
21 B. an effective bonding amount of the binder system of claim 10.
22
- 23 12. A process for preparing a foundry shape which comprises:
24
25 (a) forming a foundry mix as set forth in claim 10;
26
27 (b) forming a foundry shape by introducing the foundry mix obtained from
28 step (a) into a pattern;
29

1 (c) contacting the shaped foundry binder system with a tertiary amine
2 catalyst; and
3

4 (d) removing the foundry shape of step (c) from the pattern.

5
6 ¹³ ~~12~~ The process of claim ¹² ~~11~~ wherein the tertiary amine catalyst is a gaseous
7 tertiary amine catalyst.

8
9 ¹⁴ ~~13~~ The process of claim 12 wherein the amount of said binder composition is
10 about 0.6 percent to about 5.0 percent based upon the weight of the aggregate.

11 ¹⁵ ~~14~~ The process of claim ¹² ~~10~~ wherein the tertiary amine catalyst is a liquid tertiary
12 amine catalyst.
13

14 ¹⁶ ~~15~~ The process of casting a metal which comprises:
15
16

17 (a) preparing a foundry shape in accordance with claim 12;

18
19 (b) pouring said metal while in the liquid state into and a round
20 said shape;

21
22 (c) allowing said metal to cool and solidify; and
23

24 (d) then separating the molded article.